

TESTIMONY IN THE MATTER OF AMENDMENT OF AIR QUALITY RULES  
AND THE ADOPTION OF NEW RULES I AND II PERTAINING TO  
MERCURY EMISSION STANDARDS AND MERCURY EMISSION  
ALLOWANCE ALLOCATIONS

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For the record, my name is Charles Homer. I am the supervisor of the Technical Support Section of the Air Resources Management Bureau within the Montana Department of Environmental Quality (Department). I am here to present testimony for the Department.

On March 15, 2005, the U.S. Environmental Protection Agency (EPA) promulgated the Clean Air Mercury Rule (CAMR). EPA also promulgated an associated Regulatory Finding on March 29, 2005. The Regulatory Finding removed mercury emissions from coal-fired electric utility steam generating units (EGUs) from regulation under Section 112 of the Clean Air Act. Section 112 of the Clean Air Act regulates Hazardous Air Pollutants (HAPs) through imposition of Maximum Achievable Control Technology requirements. Removal of the authority to regulate mercury from EGUs under Section 112 allowed EPA to propose the "cap-and-trade" program included in CAMR.

One provision of CAMR establishes standards of performance for mercury emissions from new coal-fired electric utility steam generating units. CAMR also establishes a two-phased nationwide cap on mercury emissions. The phase I cap of 38 tons per year is effective in 2010 and would require a 20% to 30% reduction in U.S. mercury emissions. The phase I reductions are projected by EPA to be achieved through implementation of the requirements of the Clean Air Interstate Rule (CAIR). CAIR requires reductions in SO<sub>2</sub> and NO<sub>x</sub> emissions with mercury emission reductions expected as a "co-benefit" of SO<sub>2</sub> and NO<sub>x</sub> control, but is only applicable in 17 eastern states. Phase II is a cap of 15 tons per year or a 70% reduction in U.S. mercury emissions effective 2018. EPA assumes that compliance with the phase II cap will require additional mercury specific controls to be installed and operated by some facilities.

CAMR establishes mercury emission budgets for each state based on these nationwide caps. For Montana, the 2010 budget would mean a reduction from the estimated current level of 0.471 tons or 942 lbs. per year to 0.378

tons or 756 lbs. per year. The 2018 budget would further lower Montana's share to 0.149 tons or 298 lbs.

Under CAMR, all states, including Montana, are required to submit a state plan by November 17, 2006 that demonstrates compliance with these mercury budgets. In CAMR, EPA included a "cap-and-trade" program for reducing mercury emissions. The cap-and-trade program will be an EPA managed emission trading program similar to the current Acid Rain Program. While each state has the discretion whether to adopt this cap-and-trade program, it is a presumptively compliant state plan, accepted by EPA without further review. Any plan other than EPA's cap-and-trade system is subject to EPA's approval and will require an equivalency demonstration.

If a state chooses to participate in the cap-and-trade program, then the state-wide mercury budget established under CAMR is the amount of mercury emission allowances the state may allocate to new or existing sources. These mercury allowance allocations are used for compliance demonstration purposes. An allowance must be surrendered to EPA for each ounce of mercury emitted by a facility in a year. Under the CAMR cap-and-trade program, there is no cap on the total amount of mercury emissions allowable in a state, only on a national level. If a facility's mercury emissions would exceed its allowance allocation, the owner or operator could merely purchase available allowances on the mercury allowance market. The default allowance allocation scheme in EPA's cap-and-trade program allots 95% of allowances to existing facilities in 2010 and 97% of allowances to existing facilities in 2015.

If a state chooses not to participate in the cap-and-trade program then the state-wide mercury budget established under CAMR is set as a hard cap.

At the September meeting of the Board of Environmental Review (Board), the Montana Environmental Information Center (MEIC) with several co-petitioners and the Center for Energy and Economic Development (CEED) submitted separate petitions requesting consideration of two different proposals for controlling mercury. The Board did not proceed with rulemaking on either petition, but directed the Department to develop a mercury rule proposal for its consideration.

In developing its initial proposal the Department held discussions with interested and affected parties and the EPA. Through these discussions and in the course of its independent review of available background material, the Department established several basic concepts to guide its rule development:

- In order to reduce localized exposure to mercury, the mercury rule must set reasonably achievable emission limits for all facilities.

- Because mercury control technology is rapidly evolving, facilities should be granted some regulatory flexibility, such as the ability to obtain alternate emission limits, in the initial transition period.
- The rule should provide long-term predictability for the regulated facilities and therefore should focus on achievement of the emission limits necessary to comply with Montana's 2018 CAMR mercury budget of 298 lbs.
- While the rule should be equitable and provide a level playing field for all members of the regulated community, it also must recognize the differences between coal types (sub-bituminous and lignite) and existing, currently proposed, and new facilities.
- Because the federal cap-and-trade rule does not address localized impact from mercury emissions or apply any limit on emissions from individual facilities, the federal cap-and-trade rule by itself does not sufficiently protect Montana from exposure to mercury "hot spots". It places no limit on the amount of mercury that electrical generators could import into Montana through the purchase of mercury emission allowances and it does not provide an incentive to facilities to purchase mercury emissions allowances in state and thereby finance additional mercury control in Montana.
- During the transition period, the rule should use a phased approach for allocation of mercury allowances and issuance of alternate emission limits.
- The rule should not forestall future energy development in Montana, so at least a limited cap-and-trade component that allocates mercury allowances in an equitable manner for existing facilities and new development should be included as a safety valve.

Using these concepts, the Department developed a proposed mercury control rule for the Board's consideration that balanced energy and environmental needs. The proposed rule applied the CAMR mercury emission monitoring requirements, established reasonably achievable mercury emission limits based on compliance with Montana's 2018 mercury budget, provided facilities with compliance flexibility by allowing "alternate emissions limits" for facilities that cannot comply with the emission standards contained in the rule, and incorporated a limited version of the federal cap-and-trade provisions.

This limited implementation of cap-and-trade allowed unrestricted trading until 2015. After 2015 it required facilities to first attempt to purchase mercury allowances from other facilities within Montana before purchasing allowances on the open market as a safety valve. From 2010 through 2014 mercury allowances were allocated to existing and currently proposed facilities at levels significantly above the mercury emission limits. Facilities could either use the additional allowances to support an alternate emission limit or sell excess allowances to recoup the cost of additional mercury emission controls. For 2015 and beyond, mercury allowances were allocated at the applicable

mercury emission limits to leave allowances available for new generation. The Board was briefed on this proposal at its February 2006 meeting.

The Department discussed this initial proposal with EPA Headquarters staff at the Clean Air Markets Division (CAMD). CAMD legal staff stated that this plan would not be approvable. They cited concerns about the difficulty of tracking transactions under their trading program and stated that any plan that restricted trading was problematic because it was inconsistent with EPA's policy of free transfer of allowances.

At its March 23, 2006 meeting the Board initiated rulemaking to control mercury emissions from coal-fired utilities. Based on EPA's statement that the Department's initial proposal was not approvable, the Department presented the Board with a proposed rule that did not allow trading of mercury allowances after 2015. However, based on the request of the regulated industry, interested environmental groups and the public, the notice was purposefully written in a manner to allow the Board the widest possible latitude in crafting a final rule. The notice specifically stated that the Board was soliciting and willing to entertain comment on any and all possible regulatory options including intrastate trading.

While the provision encouraging intrastate trading after 2015 was removed from the rule that the Board noticed, the Department continued its discussions about intrastate trading with EPA. The Department presented EPA with an alternate regulatory approach providing financial incentives to trade mercury allowances within Montana. EPA staff restated that it was agency policy that if a state chooses to participate in the national trading program, the state plan must allow unrestricted trading of allowances. If a state wishes to restrict trading of allowances in any way, the only option EPA would allow would be the imposition of a hard cap.

While the Department's main concern is the establishment of appropriate emission limits, its preferred approach would be to supplement the emission limits by providing Montana's electrical generating units an incentive to trade mercury emission allowances within the state to reduce mercury emissions locally. However, because EPA has clearly stated that a plan containing such a provision would not be approvable, adoption of such a state plan could ultimately result in EPA's imposition of the federal cap-and-trade program on Montana. The Department chose not to propose a plan that federal government had preemptively rejected as not approvable.

The Board, at the urging of the regulated community and interested environmental groups, purposely set broad sideboards on the rulemaking to allow latitude in developing the rule. The Department has developed a proposed recommendation within those sideboards. This recommendation differs slightly from previous Department recommendations, primarily in the

approach to the emission limit in 2018 and also in the trading and allocation of mercury allowances.

The Department proposes that the mercury emission limits contained in the proposed rule become firm limits in 2018, in order to limit the public's exposure to potentially increased mercury emissions from unrestricted mercury allowance trading. There would be a transition period between 2010 and 2018 when EGUs would be able to obtain alternate emission limits, albeit with an increasingly stringent review.

The Department also proposes that the state participate in EPA's interstate mercury allowance trading system, so as not to preclude future energy development. The Department is proposing a mercury allowance allocation scheme that is different than the default federal cap-and-trade plan. The federal rule would allocate 95% of mercury allowances to existing sources from 2010-2014 and 97% of the mercury allowances to existing sources starting in 2015. This means that existing facilities would be required to remove less mercury than Montana's rule originally envisioned and that fewer mercury allowances would be available for new development. The Department's proposal would allocate existing sources 69% of available mercury allowances in 2018 leaving additional allowances available for currently proposed or new energy development.

Emission trading programs can encourage additional emission reductions and earlier compliance with emission standards. However this happens only if the trading program is paired with an underlying regulatory structure that establishes appropriate emission limits, such as was the case with SO<sub>2</sub> trading. The Department believes that, because our proposed mercury rule contains a reasonable emission limit, adoption of the cap-and-trade program will not negatively impact the state and appropriately balances protection of public health with energy concerns.

At this point, additional explanation of the differences between the emission limits contained in the Department's proposed mercury rule and the emission allowances which are a part of the EPA cap-and-trade rule is necessary. Understanding the difference between allowance and emission limits is critical to understanding the requirements with which a facility must comply. While the availability and cost of mercury allowances may constrain a facility's emissions, the facility's emission limit is still the controlling factor.

The emission limits contained in the rule, whether they are the 2018 emission limits of 0.9 lbs/TBtu for non-lignite (subbituminous or bituminous) coal or 2.16 lbs/TBtu for lignite or an alternate emission limit in effect during the transition period, are hard and fast ceilings on the emissions from a facility. They are enforceable requirements of the facilities' permits. Any facility that

exceeds its emission limit is subject to any of the enforcement tools the Department has at its disposal.

Mercury allowances are constraints on facilities' total emissions. Under the cap-and-trade rule, a facility must surrender an amount of mercury allowances equal to its annual mercury emissions. Mercury allowances may not be used to exceed the facility's emission limit. A facility obtains mercury allowances in two ways: they are allocated by the Department or they are purchased on the open market. If a facility is allocated or purchases mercury allowances in excess of its actual emissions, those excess allowances may be banked or sold on the open market. A facility may not use excess allowances to exceed its mercury emission limit.

The Department's modified proposal is as follows. I will first describe the provisions of the Department's proposed rule applicable after the final compliance date of 2018. I will then describe the phased transition period from 2010 to 2015:

In 2018:

- All affected facilities would be required to meet an emission limit of 0.9 lbs/Trillion Btu (TBtu), if they burn non-lignite coal, or 2.16 lbs/TBtu if they burn lignite. This will be a firm limit. Exceedances of these emission limits will constitute a violation of the air quality rules and will be subject to enforcement action. Facilities cannot purchase or use mercury allowances to exceed their emission limit.
- Montana would participate in the EPA mercury trading program. The Board would incorporate by reference 40 CFR Part 60, Subpart HHHH, allowing trading of mercury allowances. Individual sources would still be required to comply with their applicable emissions limits. However, sources that reduce actual emissions below their applicable emission limit could sell or bank excess mercury allowances.
- Mercury allowances would be allocated as follows:
  - Existing and currently proposed facilities that burn non-lignite coal would receive mercury allowances equal to their emission limit, 0.9 lbs/TBtu.
  - Existing and currently proposed facilities that burn lignite would receive mercury allowances equal to their emission limit, 2.16 lbs/TBtu.
- Mercury allowances would be allocated to operating facilities on a first come first served basis according to date of commencement of operation. The Department could not allocate allowances in excess of Montana's mercury allowance budget set forth under CAMR.
- Facilities whose actual emissions are below their emission limit would be able to sell or bank excess allowances under the interstate trading program.

- If all currently proposed facilities are in operation by 2018, there would be no unallocated mercury allowances available and any new facilities would need to purchase allowances equal to their actual emissions.
- Mercury allowances would not be allocated to facilities that have not commenced commercial operation. Facilities would not be able to speculate in mercury allowances merely because they hold an air quality permit.
- Facilities that have commenced commercial operation and hold a valid air quality permit would receive allowance allocations even if they operate at less than capacity.
- Facilities subject to the Department's proposed mercury rule would be the same as those subject to CAMR (generally, coal-fired electric-utility generating units greater than 25 MW in size).

The Department understands that these emission limits will require additional pollution control on existing facilities, so a transition period is warranted.

Beginning in 2010:

- All affected facilities would be required to apply for and obtain an air quality permit to install air pollution control equipment or utilize air pollution control practices to control mercury and would be subject to a mercury emission limitation of 0.9 lbs/TBtu for units that combust sub-bituminous coal or 2.16 lbs/TBtu for units that combust lignite.
- EGUs that properly installed and operated mercury control technology, practices, or boiler technology approved by the Department as a "continual program of mercury control progression" but were unable to comply with these emission limits, would be eligible to apply for an alternate emission limit.
- The alternate emission limit would expire in 2015.
- Exceedances of emission limits or alternate emission limits will constitute a violation of the air quality rules and be subject to enforcement action. Facilities cannot purchase or use mercury allowances to exceed their applicable emission limit.
- Mercury allowances would be allocated as follows:
  - Existing facilities that burn non-lignite coal would receive mercury allowances equal to 2.4 lbs/TBtu
  - Existing facilities that burn lignite would receive mercury allowances equal to 5.76 lbs/TBtu.
  - Currently proposed and new facilities that burn non-lignite coal would receive mercury allowances equal to 1.5 lbs/TBtu.
  - Currently proposed and new facilities that burn lignite would receive mercury allowances equal to 3.6 lbs/TBtu.
- Mercury allowances would be allocated to operating facilities on a first come first served basis according to date of commencement of operation. The Department could not allocate allowances in excess of Montana's mercury allowance budget set forth under CAMR.

- These mercury allowances are more than a facility will need to meet the emission limits of 0.9 and 2.16 lbs/TBtu and may, in fact, be more than a facility will need to meet their alternate emission limits. However, this does not allow facilities to exceed their emission limits or alternate emission limits as applicable.
- Facilities whose actual emissions are below their allowance allocation would be able to sell or bank excess allowances. Facilities whose actual emissions are above their allowance allocation and below their emission limit (or alternate emission limit) would be required to purchase mercury allowances up to their actual emissions. Actual emissions cannot exceed emission limits, no matter the amount of emission allowances available.

In 2015,

- Facilities still unable to meet the 0.9 lbs/TBtu (subbituminous) and 2.16 lbs/TBtu (lignite) emission limits, may apply for an extended alternate emission limit. The applicant must make a more stringent showing to qualify for the extended alternate emission limit and the extended alternate emission limit would expire in 2018.
- Mercury allowances would be allocated according to a facility's emission limit (not including an extended alternate emission limit) and would be as follows:
  - Existing and currently proposed facilities that burn non-lignite coal would receive mercury allowances equal to their emission limit, 0.9 lbs/TBtu.
  - Existing and currently proposed facilities that burn lignite would receive mercury allowances equal to their emission limit, 2.16 lbs/TBtu.
- Facilities whose actual emissions are below their emission limit/allowance allocation will be able to sell excess mercury allowances under the interstate trading program.
- Facilities with extended alternate emission limits would need to purchase mercury allowances to cover the gap between their allowance allocation (their applicable limit) and their alternate emission limit.

Impacts of the Department's proposed rule include the following:

- At a minimum, by 2018, EGUs would have to meet firm mercury emission limits of 0.9lbs/TBtu for units that burn non-lignite coal and 2.16 lbs/TBtu for units that burn lignite. However, new power plants can still be built in the state and they would have to purchase mercury allowances each year if their emissions exceed the 298 lbs/yr allocated to Montana..
- Existing sources will implement new control technology to significantly reduce their mercury emissions.



- If an EGU does not comply with the 0.9 lbs/TBtu emission limit for non-lignite coal plants or the 2.16 lbs/TBtu emission limit for lignite plants by 2018, the Department could impose penalties or use other enforcement tools, just as it would for violations of other air quality standards.

That concludes my oral testimony. I have included in my written testimony a detailed review of environmental impacts from the adoption of this rule, a “House Bill 521” review comparing stringency of state and local rules to any comparable federal regulations or guidelines and a “House Bill 311” review assessing impacts on private property. Although, the Department believes that HB 521 may not apply to the rules as proposed by the Board or the Department, the Department is submitting information that addresses the criteria required for a written finding pursuant to HB 521. The Department anticipates that extensive additional information also will be submitted to the Board during the rule hearings and written comment period that will provide additional information that the Board could include in written findings.

Mercury is a naturally occurring element found in air, water, and soil. It exists in several forms: elemental mercury; inorganic mercury compounds; and organic mercury compounds. Mercury is found in many materials, including coal. When coal is burned, mercury is released into the environment. Elemental mercury is the most likely form to travel in the air globally and form part of the global cycle, whereas, particle-bound mercury and oxidized (or ionic) mercury can fall out of the air over a range of distances from the emission source.

EPA estimates that annual global mercury emissions from all sources, natural and human-caused, are in the range of 4,800 – 8,300 tons per year. U.S. human-caused mercury emissions account for approximately three percent of the total global emissions, and the U.S. power sector contributes approximately one percent of the total global emissions. Coal-burning power plants are the largest human-caused source of mercury emissions to the air in the U.S. Nationally, EGUs cause over 40% of all anthropogenic mercury emissions.

EPA estimates that about one-quarter of U.S. mercury emissions from coal-burning power plants is deposited within the contiguous U.S. and the rest enters the global cycle. Similarly, EPA estimates that more than one-half of the mercury deposited in the U.S. comes from sources outside the U.S. However, deposition varies by geographical location. For example, U.S. sources represent a greater percentage of the total deposition in parts of the Northeast because of the direction of the prevailing winds. EPA has estimated that approximately eight percent of mercury emissions from a particular EGU are deposited locally.

EPA estimates of local deposition are in dispute. An EPA-funded study conducted in 2003-2004 in Steubenville, Ohio (“Sources of Wet Deposition in Eastern Ohio, USA,” Keeler, G.J., et al., peer reviewed in December 2005,

submitted for publication in February 2006), used rain samples and meteorological data to track mercury emissions from smokestacks to monitors. Nearly 70 percent of the mercury in rain collected at an Ohio River Valley monitoring site originated from nearby coal-burning industrial plants. These findings show that "hot spots" (concentrated local deposition of mercury) may be a much bigger concern than previously acknowledged. In addition, results from the "Mechanisms for Mercury Removal by O<sub>3</sub> and OH in the Atmosphere" Study (Calvert, J.G, Lindberg, S.E., published June 2005) suggest that mercury emissions from global sources potentially account for less mercury deposition in the U.S. than previously believed. This means that, in EPA's analysis for CAMR, the contribution of global sources to U.S. deposition may have been overestimated and the impact from domestic sources underestimated.

Mercury in the air eventually settles into water or onto land where it can be washed into water. Once deposited, microorganisms can convert mercury into methyl mercury, a highly toxic form that accumulates in fish, shellfish, birds, and other animals that consume fish, with concentrations increasing further up the food chain. Many variables influence the levels of methyl mercury concentrations in fish, including water pH and temperature, the amount of dissolved solids and organic material in the water, the types of organisms that inhabit the water, and the presence of chemicals in the water. At high levels of exposure, the effects of methyl mercury on birds and mammals may include reduced reproduction, slower growth and development, abnormal behavior, and death.

Fish and shellfish are the main sources of methyl mercury exposure to humans, with large fish that eat other fish, generally, having the highest concentrations. Mercury exposure at high levels can harm the brain, heart, kidneys, lungs, and immune system of people of all ages. High levels of methyl mercury in the bloodstream of unborn babies and young children may harm the developing nervous system, impairing the ability of a child to think and learn.

EPA has established a blood mercury level reference dose (RfD) of 0.1 micrograms/kilogram of body weight per day as an exposure level without recognized adverse effects. In a 1999-2000 National Health and Nutrition Examination Survey of 16 to 49-year old women, approximately 8% of the women in the survey had blood mercury concentrations reflecting levels greater than EPA's RfD. Based on this survey, EPA estimates that more than 300,000 babies born each year in this country may have increased risk of learning disabilities associated with in utero exposure to methyl mercury.

Montana has statewide fish advisories for northern pike, lake trout, and walleye greater than 15 inches, because of mercury contamination, recommending no consumption by sensitive populations, which includes children and pregnant women. The statewide advisory also recommends limited consumption by sensitive populations of bass, burbot, grayling, perch, salmon, sunfish, brook trout, brown trout, cutthroat trout, rainbow trout, walleye less than 15 inches, and

whitefish, with the suggested consumption limit varying by fish species, from one meal per week to four meals per week. There are also numerous other advisories around the state warning against eating other types of fish from different water bodies, because of high levels of mercury. These warnings recommend various consumption limits for sensitive populations as well as the general population. These water bodies include many of the state's popular fisheries, including, among others, Bighorn Lake, Bynum Reservoir, Canyon Ferry Reservoir, Clark Canyon Reservoir, Crystal Lake, Flathead Lake, Fresno Reservoir, Georgetown Lake, Hauser Reservoir, Hebgen Lake, Holter Reservoir, Island Lake, Lake Frances, Lake Koocanusa, Lake Mary Ronan, Martinsdale Reservoir, Nelson Reservoir, Tiber Reservoir, Tongue River Reservoir, and Whitefish Lake.

Montana's portion of the national mercury budget is 756 lbs in 2010 and 298 lbs for 2018. Those limits come from the allocation between states of the 2010 and 2018 national mercury budgets of 38 and 15 tons respectfully, for coal-fired EGUs. CAMR imposes a first phase nationwide cap of 38 tons per year (tpy) of mercury emissions that will become effective in the year 2010 and a second phase cap of 15 tpy that will become effective in the year 2018. As stated in the preamble for CAMR, the 15 ton cap reflects a level of mercury emission reductions that would exceed the level that would be achieved solely as a co-benefit of controlling SO<sub>2</sub>, NO<sub>x</sub>, and particulate matter. According to EPA, the additional reductions in mercury emissions for 2018 would be achievable because Activated Carbon Injection (ACI) and other mercury-specific air pollution control technologies would be adequately demonstrated before 2018 to allow for deployment across the field of EGUs. Therefore, the 2018 caps (national and, subsequently, for individual states) are not health-based standards, but are based on the projected capabilities of mercury control technologies. CAMR was promulgated as a New Source Performance Standard with the accompanying emission guidelines for existing sources. These types of regulations (along with Best Available Control Technology and Maximum Achievable Control Technology emission limitations) are technology-based, rather than health-based.

The Department's proposed mercury rule would limit EGU mercury emissions to 0.9 pounds per trillion British thermal units (lb/TBtu) for non-lignite coal and 2.16 lb/TBtu for lignite, based on a rolling 12-month average, beginning January 1, 2010, or when commercial operation begins, whichever is later, and would require operation of equipment, by January 1, 2010, that is projected to meet those limits. The 0.9 lb/TBtu for non-lignite coal and 2.16 lb/TBtu for lignite limits represent the level of mercury reduction necessary for the existing, permitted EGUs and EGUs that are either recently permitted or in the permitting process to achieve compliance with the EPA-mandated 2018 Montana mercury budget of 298 lbs. Establishing an emission standard that will achieve the long-term goal of meeting the 2018 budget, rather than establishing phased-in emission limits, would require better planning by the owners and operators, considering control configurations necessary to meet the ultimate goal. The proposed standard would also require some level of mercury control on every EGU in the state,

which would result in emission reductions by the existing EGUs by 2010, rather than potentially delaying implementation of control technology to meet only the 2018 mercury budget.

As the direct impact on Montana's lakes and streams from mercury regulation in Montana and nationally, and consequently, the impacts on consumers of fish from those water bodies, would be difficult to quantify, the Board should seek to minimize the impact of mercury emissions from Montana EGUs both locally and statewide based on the mercury emission controls that are currently available and projected to be available prior to 2018. Requiring equipment capable of controlling mercury emissions on every EGU in Montana ensures that those local and statewide impacts would be minimized. Participation only in the CAMR national trading program may not require any EGUs in Montana to control their mercury emissions, instead those EGUs may choose to buy mercury allowances from EGUs in other states that are controlling mercury emissions. Although there is a need for the flexibility that the cap-and-trade program offers, requiring equipment that would control mercury emissions on every EGU offers more health protection from potential local and statewide impacts of mercury deposition. Also, EGUs are the largest source of human-caused mercury emissions in the state. Although, mercury emissions from EGUs in Montana account for only a small percentage of global mercury emissions and presently may account for a small percentage of the mercury deposited in Montana, because of the high risk posed by mercury to human health and welfare and to the environment, it is necessary to take all reasonable measures to reduce human-caused mercury emissions. Therefore, it is necessary for the Board to reduce mercury emissions from EGUs to protect public health and welfare and the environment.

EPA's Office of Inspector General (OIG) found that the cap-and-trade program could be strengthened to better protect public health and ensure that anticipated emission reductions would be achieved (Monitoring Needed To Assess Impact Of EPA's Clean Air Mercury Rule On Potential Hotspots, May 15, 2006). Among other flaws, OIG concluded that the proposed cap-and-trade program would not require installation of mercury-specific controls to achieve the interim 2010 cap and that the cap-and-trade program would not adequately address the potential for hot spots. OIG stated in its report that: "Trading programs are generally thought to be most effective for pollutants that do not deposit locally."

There are other alternate regulatory approaches to controlling mercury emissions from EGUs. As previously mentioned, EPA promulgated a model cap-and-trade program as an approvable option to control mercury under the CAMR rule. Montana and other states have the option of incorporating EPA's model cap-and-trade rule language without any enhancements, to comply with CAMR. However, use of the model cap-and-trade program alone would not provide any mitigation for local and statewide impacts of mercury deposition. Because EPA will impose the federal cap-and-trade system if Montana fails to submit an approvable state

plan under CAMR, the federal cap-and-trade system is the “no action alternative” in this situation.

Other options considered were requirements that included a percent reduction instead of an emission limit, a control technology requirement, intrastate trading, no trading at all, or any combination of trading and an emission limitation or control technology requirement. The concept of a percent reduction requirement instead of an emission limit should be rejected because such a rule could encourage EGUs to use higher-mercury coal. In that instance, mercury emissions could increase beyond a desirable level while still maintaining compliance with a percent control requirement. Montana subbituminous coal is relatively low in mercury content when compared with lignite or eastern bituminous coals.

Intrastate trading would limit the importation of mercury allowances from other states. However, intrastate trading would lack flexibility without a safety valve allowing access to allowances from outside the state, if necessary. In addition, EPA informed the Department that a plan containing any restrictions on interstate trading would be unapprovable.

The prohibition of trading has similar issues with respect to the lack of flexibility offered to the EGUs if the installed control technology does not perform as it was intended. In order to minimize mercury emissions within the state of Montana while allowing flexibility to EGUs, the option of an emission limitation with a requirement for equipment to control mercury in addition to interstate trading would provide the most benefit.

Several eastern and mid-western states have adopted, either through rulemaking or legislation, mercury regulations that are much more stringent than CAMR and, in some cases, prohibit interstate trading. The most stringent include 90% mercury emission control requirements by as early as December 2007. For the most part, such regulations address EGUs fired by eastern bituminous coals. Illinois, however, is a noted exception, as the Illinois EPA estimates the EGU fleet there burns approximately 85% Powder River Basin coal. The Illinois proposal, as described by their Governor, includes a 90% reduction using intrastate averaging by June 2009 and a 90% reduction at all EGUs in the state by the end of 2012.

The 0.9 lb/MMBtu limit in the proposed Department mercury rule represents, approximately, an 80% reduction in mercury emissions. Mercury emission reductions of 90% have not been demonstrated at this time in full-scale long-term trials on units that burn western coals (either subbituminous or lignite). However, based on trials thus far, an 80% reduction does appear to be realistic. Montana, to meet its 2018 budget cap, would need to reduce mercury emissions from approximately 900-950 lbs per year to 298 pounds, which would amount to approximately a 70% reduction overall from the EGUs in the state. Requiring

Montana units to install equipment to control mercury would require investment of capital within the state to reduce mercury emissions instead of Montana units potentially financing mercury control elsewhere through the purchase of mercury allowances. In addition, any local impacts would be mitigated by such investment in Montana EGUs.

Other impacts from controlling mercury at Montana EGUs include potential impacts on fly ash and bottom ash (also known as coal combustion byproducts) reuse and disposal. Currently, approximately ten percent of potential mercury emissions from Montana EGUs is captured in the fly ash or bottom ash (based on levels of estimated current mercury control compared with as-fired mercury in coal data). Fly ash is not currently regulated as a hazardous waste; nationally it is classified as solid waste and is generally landfilled or has potential uses as a replacement for gypsum in cement or wallboard manufacturing. For example, the PPL Montana – Corette plant currently sells all of its fly ash for use as a cement substitute in concrete. The mercury emission limits and control requirements in the rules proposed by the Board and the Department would potentially increase the mercury contained in the fly ash and bottom ash because, as proposed, all Montana EGUs would be subject to mercury control requirements, instead of some EGUs controlling mercury and some buying mercury allowances under the national trading program.

Fly ash is generally introduced into portland cement as a post process additive. So where this is the case, introduction of fly ash with increased level of mercury would not increase mercury emissions from the cement kiln. Also, because mercury does not readily leach from concrete, use of concrete with increased levels of mercury would not increase mercury in the environment.

If ACI is used to control mercury, for example, injecting the activated carbon upstream of particulate control devices may adversely impact the ability to market fly ash for beneficial use applications. As previously mentioned, fly ash can be used in cement; however, any additional carbon content may render the fly ash unsuitable for sale for this purpose. Along with the potential loss of revenue from the sale of the ash, the affected EGU would need to pay for disposal of the fly ash that would have otherwise been sold. According to the Department of Energy's National Energy Technology Laboratory's (DOE/NETL) Phase II Mercury Control Field Testing Program and its Preliminary Economic Analysis of Activated Carbon Injection from April of 2006, the total byproduct impacts from injecting activated carbon upstream of an electrostatic precipitator (ESP) are estimated to be \$35 per ton, which includes \$18 per ton for lost revenue from fly ash sales and \$17 per ton for non-hazardous fly ash disposal. However, the byproduct impacts associated with ACI may not be as severe for units equipped with the Spray Dry Absorber/Fabric Filter (SDA/FF) configuration since the majority of recycled SDA byproducts are used for low value mining applications, generally as fill material. If the byproduct is contaminated, for example by carbon, it may be unusable as fill material and will then need to be

disposed of in some other manner. Therefore, the SDA byproduct impacts would only include the added cost of \$17 per ton for non-hazardous SDA byproduct disposal and no lost revenue from sales. These cost estimates represent a “snapshot” in time based on the methodology used, assumptions made, and conditions that were specific to the time when DOE/NETL field testing occurred. In addition, these estimates are hypothetical and represent a worst-case scenario.

With respect to Montana sources, some EGUs are currently employing non-hazardous fly ash disposal (either onsite in a monofill or offsite in a Class II landfill) while some are able to sell the fly ash for beneficial use. As previously mentioned, the PPL Montana Corette plant sells all of its fly ash for use in concrete. The PPL Montana Colstrip plant sells some bottom ash, but currently disposes of all its fly ash onsite. The configurations and assumptions associated with the costs described above are not specific to Montana EGUs; however, PPL Montana Corette has an ESP and Rocky Mountain Power - Hardin has an SDA/FF configuration. Therefore, the cost impacts may be similar if those particular EGUs elect to install ACI.

In addition, these costs assume that the spent activated carbon would be considered as a component of the fly ash (as a part of the flue gas emission control waste) and, therefore, remain under the same waste classification as the fly ash. However, the status of the waste classification may change depending on the mercury control technique employed and the stability of mercury in the ash and the activated carbon residue. Currently, if fly ash is disposed of off-site, it is classified as a Group II waste and must be disposed of in a Class II landfill (similar to the requirements for municipal waste) with liners and a leachate collection system. If fly ash is disposed of onsite in a monofill, no solid waste license is required. However, a liner and leachate collection system may be required under water quality regulations or other authority. If the spent activated carbon and fly ash do not continue to be exempt from hazardous waste regulation, it would likely be managed and disposed of under Resource Conservation and Recovery Act (RCRA) rules. If the mercury control via ACI were to trigger required compliance with RCRA Subtitle C hazardous waste regulations because of the increased mercury concentration (and a possible potential for release), higher waste disposal costs would result.

#### HB 521 REVIEW (Comparing Stringency of State and Local Rules to Any Comparable Federal Regulations or Guidelines)

Sections 75-2-111 and 207, MCA, codify the air quality provisions of House Bill 521, from the 1995 legislative session, by requiring the Board to make certain written findings after a public hearing and public comment, prior to adopting a rule to implement the Clean Air Act of Montana that is more stringent than a comparable federal regulation or guideline.

In this proceeding, the Board is proposing to amend and adopt rules to establish restrictions on emissions of mercury from coal-fired power plants, and the EPA has promulgated federal regulations that also provide for regulation of mercury emissions from the same facilities. However, it's not clear that HB 521 applies either to the amendments and new rules proposed by the Board or to the revisions to the Board's proposal now suggested by the Department.

HB 521 applies only when the Board adopts a state rule that is more stringent than federal regulations or guidelines. It is not clear that EPA's mercury regulations, known as the Clean Air Mercury Rule (CAMR), are comparable to the rules proposed by the Board and the Department or that the rules proposed by the Board and the Department would be more stringent. CAMR establishes: state mercury budgets for coal-fired power plants, which may not be exceeded; New Source Performance Standard (NSPS) emission limits for new coal-fired power plants; and a model cap-and-trade program that applies to both new and existing sources. Both the rules proposed by the Board and the rules proposed by the Department are more comprehensive than CAMR in that they would provide emissions limits for existing sources, as well as new sources, which is a major difference from CAMR. This difference may be similar to the difference between EPA's air quality permit program, which applies only to major stationary sources, and Montana's air quality permit program, which applies to major and minor sources. So, it's not clear that the proposed state rules are comparable to CAMR.

Also, it's not clear that the rules proposed by the Board and the Department would be more stringent than CAMR. While, CAMR establishes state mercury budgets that may not be exceeded and emission limits for new sources, and specifies a model cap-and-trade program that EPA will implement in a state that does not submit mercury rules that are approved by EPA, CAMR expressly specifies that a state may adopt different or more stringent provisions, as long as the state rules provide for compliance with the state's budget and require compliance with the monitoring, record keeping, and reporting provisions of 40 CFR Part 75. 40 CFR 60.24(h)(3) and (4), of CAMR, state in relevant part:

(3) The State's State plan under paragraph (h)(1) of this section shall contain emission standards and compliance schedules and demonstrate that they will result in compliance with the State's annual electrical generating unit (EGU) mercury (Hg) budget for the appropriate periods. ....

(4) Each State plan under paragraph (h)(1) of this section shall require EGUs to comply with the monitoring, record keeping, and reporting provisions of part 75 of this chapter with regard to Hg mass emissions.

In the preamble to CAMR, EPA stated that:



States have the flexibility to meet these State budgets by participating in a trading program or establishing another methodology for Hg emissions reduction from coal-fired electric generating units, as discussed elsewhere in this action. States have the ability to require reductions beyond those required by the State budget.

70 Fed. Reg. 28621 (May 18, 2005). So, the only real requirements of CAMR for state rules are compliance with CAMR's state budgets and monitoring, record keeping, and reporting requirements, and both the rules proposed by the Board and the rules proposed by the Department would adopt those requirements.

So, HB 521 may not apply to either the rules proposed by the Board or the rules proposed by the Department and no further analysis may be required under HB 521. However, both sets of rules also would meet the criteria specified in HB 521 for the Board to adopt rules that are more stringent than comparable federal regulations or guidelines.

Pursuant to 75-2-207, MCA, the criteria specified in HB 521 for the Board to adopt rules that are more stringent than a comparable federal regulation or guideline are as follows. That the proposed standard or requirement protects public health or the environment can mitigate harm to the public health or the environment; and is achievable with current technology.

With respect to (a), Montana has statewide fish advisories for northern pike, lake trout, and walleye greater than 15 inches, because of mercury contamination, recommending no consumption by sensitive populations, which includes children and pregnant women. The statewide advisory also recommends limited consumption by sensitive populations of bass, burbot, grayling, perch, salmon, sunfish, brook trout, brown trout, cutthroat trout, rainbow trout, walleye less than 15 inches, and whitefish, with the suggested consumption limit varying by fish species, from one meal per week to four meals per week. There are also numerous other advisories around the state warning against eating other types of fish from different water bodies, because of high levels of mercury. These warnings recommend various consumption limits for sensitive populations as well as the general population. These water bodies include many of the state's popular fisheries, including, among others, Bighorn Lake, Bynum Reservoir, Canyon Ferry Reservoir, Clark Canyon Reservoir, Crystal Lake, Flathead Lake, Fresno Reservoir, Georgetown Lake, Hauser Reservoir, Hebgen Lake, Holter Reservoir, Island Lake, Lake Frances, Lake Koocanusa, Lake Mary Ronan, Martinsdale Reservoir, Nelson Reservoir, Tiber Reservoir, Tongue River Reservoir, and Whitefish Lake.

As the direct impact on Montana's lakes and streams from mercury regulation in Montana and nationally, and consequently, on the consumers of fish from those water bodies, would be difficult to quantify, the Board with this rulemaking is

seeking to minimize the impact of mercury emissions from Montana EGUs both locally and throughout the state based on the mercury emission controls that are currently available and projected to be available prior to 2018. Requiring equipment capable of controlling mercury emissions on every EGU in Montana ensures that those local and statewide impacts would be minimized.

Participation only in the CAMR national trading program may not require any EGUs in Montana to control their mercury emissions, instead those EGUs may choose to buy mercury allowances from EGUs in other states that are controlling mercury emissions. Although there is a need for the flexibility that the cap-and-trade program offers, requiring equipment that would control mercury emissions on every EGU offers more health protection from potential local and statewide impacts of mercury deposition. Also, EGUs are the largest source of human-caused mercury emissions in the state. Although, mercury emissions from EGUs in Montana account for only a small percentage of global mercury emissions and presently may account for a small percentage of the mercury deposited in Montana, because of the high risk posed by mercury to human health and welfare and to the environment, it is necessary to take all reasonable measures to reduce human-caused mercury emissions. Therefore, this rulemaking would reduce mercury emissions from EGUs in Montana to protect public health and the environment.

With respect to (b), requiring that all EGUs in Montana install equipment capable of mercury control and limiting mercury emissions to a greater extent than under CAMR can mitigate harm to the public health and the environment in two ways. Existing EGUs (as defined under CAMR, those EGUs that commenced operation before January 1, 2001) that have been emitting mercury since the start of operation would be required to install equipment capable of mercury control. For example, the PPL Montana – Colstrip facility's currently estimated mercury emissions are approximately 800 pounds per year, far greater than the facility's estimated mercury emissions 15 years ago. The past emissions and deposition cannot be mitigated through installing equipment capable of mercury control, but that mercury control can mitigate future emissions and subsequent deposition, therefore mitigating harm to public health and the environment. For new facilities, the future impact of mercury emissions would be mitigated based on the control requirements for mercury and mercury emission limitations.

With respect to (c), mercury control for EGUs is maturing rapidly in response to the CAMR rule and other mercury regulations (including those being implemented by other states). The mercury rules noticed by the Board and proposed by the Department call for a mercury limitation of 0.9 lb/TBtu for subbituminous coal and 2.16 for lignite, representing approximately 80% control for non-lignite plants and 77% control for lignite plants. To take into consideration the differences in control and boiler configurations across the Montana EGU fleet, the proposed rules also allow for an alternative emission limit (AEL). The AEL allows flexibility for EGUs in Montana if they install equipment capable of controlling mercury and use good pollution control

practices. In addition, the AEL may also be extended if necessary by applying to the Department and providing information regarding the specific circumstances of not being able to meet a lower limit.

The limits set out by the proposed rules are currently achievable. The Department of Energy (DOE) aims to have advanced mercury control technologies available to achieve 90% or greater capture in commercial demonstration by 2010. Those levels of control are being displayed currently in field testing. According to the DOE/National Energy Technology Laboratory's (NETL) Phase II Mercury Control Technology Field Testing Program's Preliminary Economic Analysis of Activated Carbon Injection (<http://www.netl.doe.gov/technologies/coalpower/ewr/mercury/pubs/Phase%20II%20Hg%20Control%20Economic%20Analysis%20FINAL%200406.pdf>), two subbituminous-fired units were able to achieve 93% mercury control (Holcomb Station Unit 1 and Meramec Station Unit 2) at different rates of activated carbon injection. Both of those units were involved in the DOE/NETL Phase II mercury control technology field testing. The report listed estimated costs of that control in 2005 dollars. For Holcomb Station Unit 1, maintaining 90% mercury removal using ACI cost \$6,060 per pound of mercury removed on a 20-year levelized and incremental cost basis without byproduct impacts (loss of the potential ability to sell fly ash for beneficial use). With byproduct impacts, it was \$18,000 per pound of mercury removed on a 20-year levelized and incremental cost basis. For Meramec Station Unit 2, maintaining 90% mercury removal using ACI cost \$17,700 per pound of mercury removed on a 20-year levelized and incremental cost basis without byproduct impacts. With byproduct impacts, it was \$42,500 per pound of mercury removed on a 20-year levelized and incremental cost basis.

For lignite, the Stanton Station Unit 10 achieved between 75% control and 93% control during the DOE/NETL Phase II mercury control technology field testing. For Stanton Station Unit 10, maintaining 70% mercury removal using ACI cost \$17,400 per pound of mercury removed on a 20-year levelized and incremental cost basis without byproduct impacts. With byproduct impacts, it was \$47,300 per pound of mercury removed on a 20-year levelized and incremental cost basis.

These facilities do not have identical boiler and control technology configurations to those at the Montana EGUs. However, these results do show that mercury control is achievable right now for the coal types burned (and mined) in Montana. Under the rules currently noticed by the Board and proposed by the Department, the AEL allows for flexibility as owners and operators of EGUs work to implement the appropriate equipment for their particular boiler and control configuration.

HB 311 REVIEW (Assessing Impact On Private Property)

Sections 2-10-101 through 105, MCA, codify House Bill 311, the Private Property Assessment Act, from the 1995 Montana Legislature, by requiring that, prior to taking an action that has taking or damaging implications for private real property, a state agency must prepare a taking or damaging impact assessment. Under Section 2-10-103(1), MCA, "action with taking or damaging implications" means:

a proposed state agency administrative rule, policy, or permit condition or denial pertaining to land or water management or to some other environmental matter that if adopted and enforced would constitute a deprivation of private property in violation of the United States or Montana constitution.

Section 2-10-104, MCA, requires the Montana Attorney General to develop guidelines, including a checklist, to assist agencies in determining whether an agency action has taking or damaging implications.

The present proposed action involves rule amendments and new rules affecting use of private real property, and the Board has discretion legally not to take the action, although EPA will implement CAMR in the state if the state does not submit rules that are approved by EPA. So, I completed an Attorney General's Private Property Assessment Act Checklist, which is attached to this memo. The proposed rule amendments and new rules would not:

- \* result in either a permanent or indefinite physical occupation of private property;
- \* deprive any owner of all economically viable uses of private property;
- \* deny a fundamental attribute of private property ownership;
- \* require a private property owner to dedicate a portion of property or grant an easement;
- \* have a severe impact on the value of private property; or
- \* damage private property by causing a physical disturbance with respect to the property in excess of that sustained by the public generally.

Based upon completion of the attached Attorney General's Checklist, the proposed rulemaking does not have taking or damaging implications, and no further House Bill 311 assessment is required.